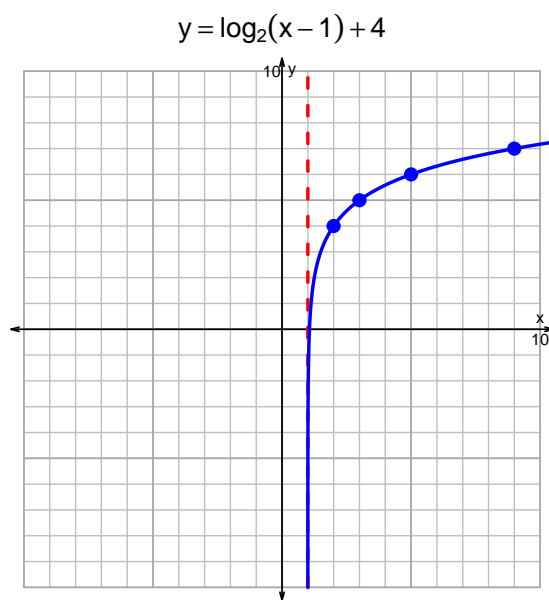
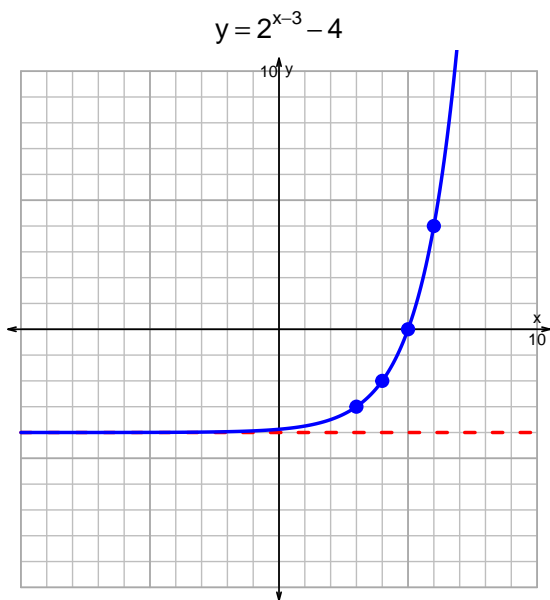


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## s18: EXP LOG (SLTN v336)

1. (10 pts) Graph  $y = 2^{x-3} - 4$  and  $y = \log_2(x-1) + 4$  on the grids below. Also, draw any asymptotes with dashed lines.



*Somewhat useful hint:  $2^3 = 8$ , and thus  $\log_2(8) = 3$ .*

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$29 = \left(\frac{5}{7}\right) \cdot 2^{-3t/4}$$

Divide both sides by  $\frac{5}{7}$ .

$$\frac{29 \cdot 7}{5} = 2^{-3t/4}$$

Take log, base 2, of both sides.

$$\log_2\left(\frac{29 \cdot 7}{5}\right) = \frac{-3t}{4}$$

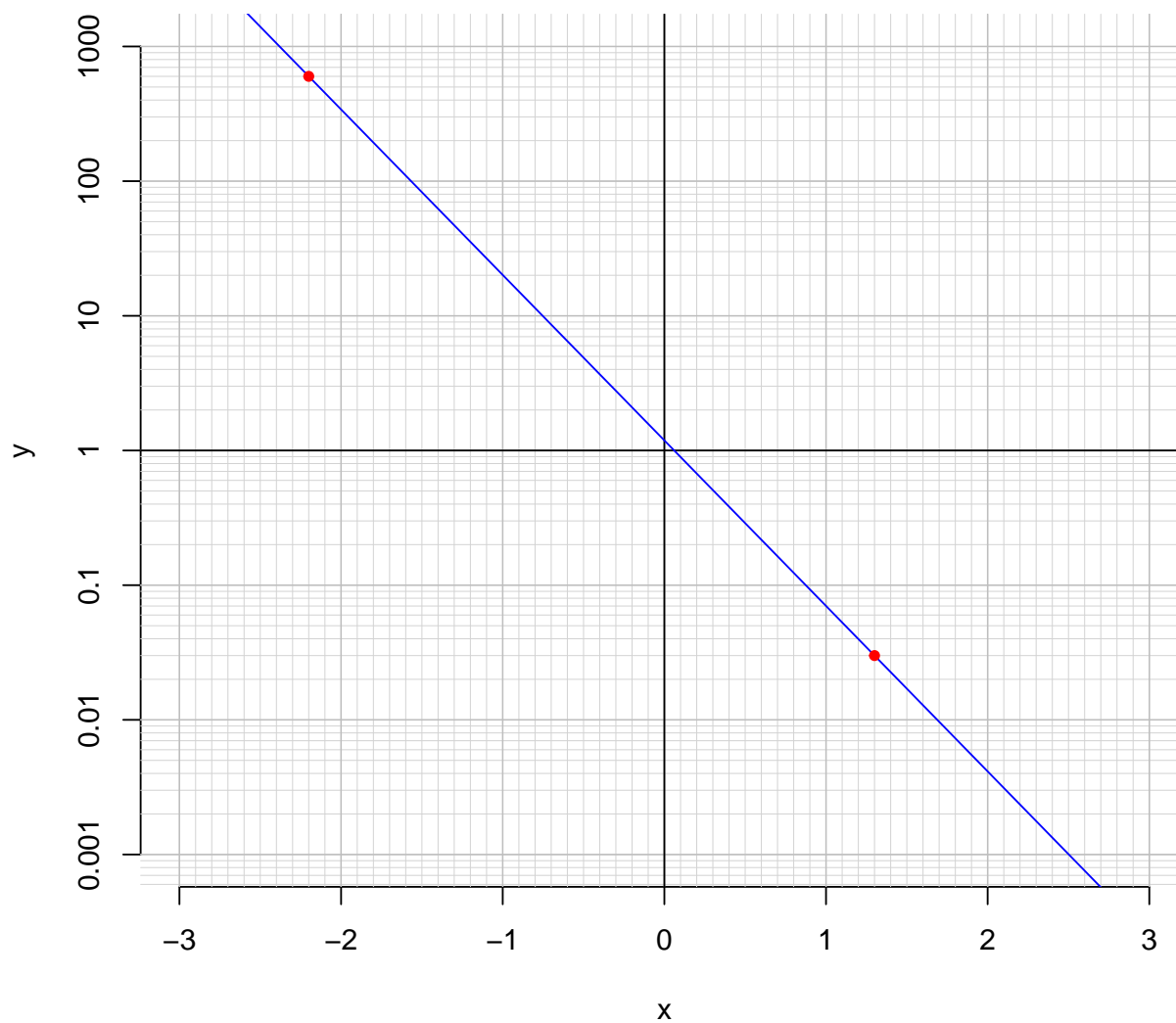
Divide both sides by  $\frac{-3}{4}$ .

$$\frac{-4}{3} \cdot \log_2\left(\frac{29 \cdot 7}{5}\right) = t$$

Switch sides.

$$t = \frac{-4}{3} \cdot \log_2\left(\frac{29 \cdot 7}{5}\right)$$

3. (10 pts) An exponential function  $f(x) = 1.19 \cdot e^{-2.83x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(-2.2)$ .

$$f(-2.2) = 600$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{-1}{2.83} \cdot \ln\left(\frac{x}{1.19}\right)$$

Using the plot above, evaluate  $f^{-1}(0.03)$ .

$$f^{-1}(0.03) = 1.3$$